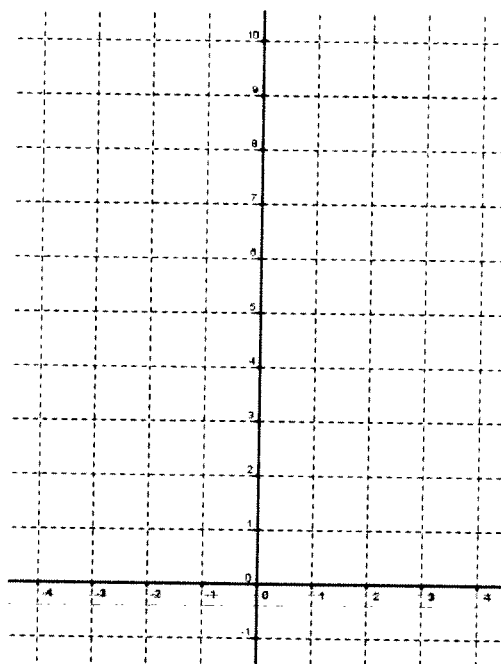


3.4 Properties of exponential functions

Complete a graph and table of values with finite differences for each of the following exponential functions.

$f(x) = 3^x$			
x	y	1st	2nd
-3		—	—
-2			—
-1			
0			
1			
2			
3			

$g(x) = 0.5^x$			
x	y	1st	2nd
-3		—	—
-2			—
-1			
0			
1			
2			
3			

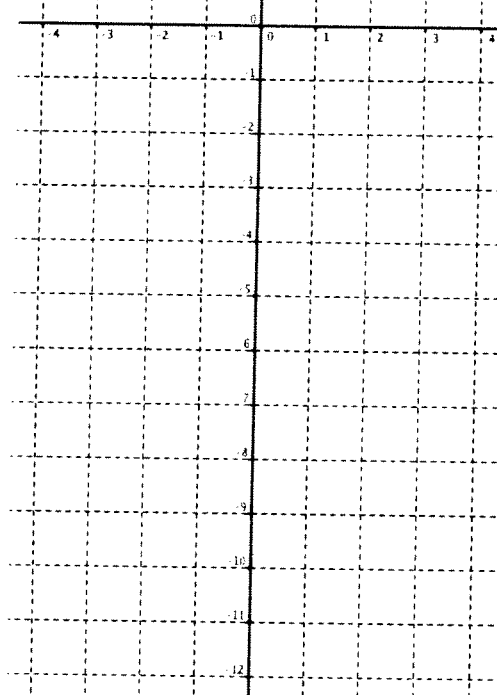


Describe key properties of an exponential function from the tables, graphs, and equations (above).

Complete a graph and table of values with finite differences for each of the following exponential functions.

$f(x) = -3^x$			
x	y	1st	2nd
-3		—	—
-2			—
-1			
0			
1			
2			
3			

$g(x) = -3(2)^x$			
x	y	1st	2nd
-3		—	—
-2			—
-1			
0			
1			
2			
3			



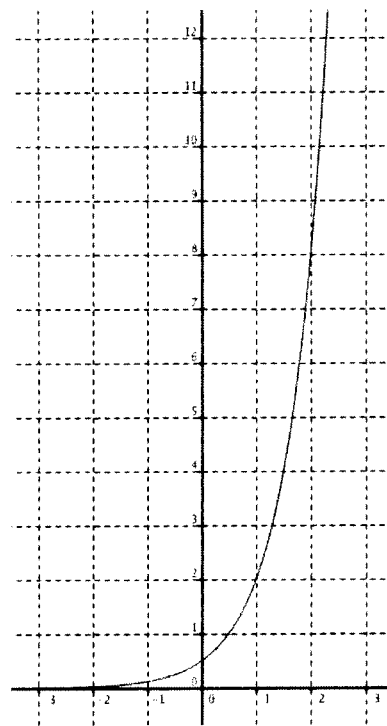
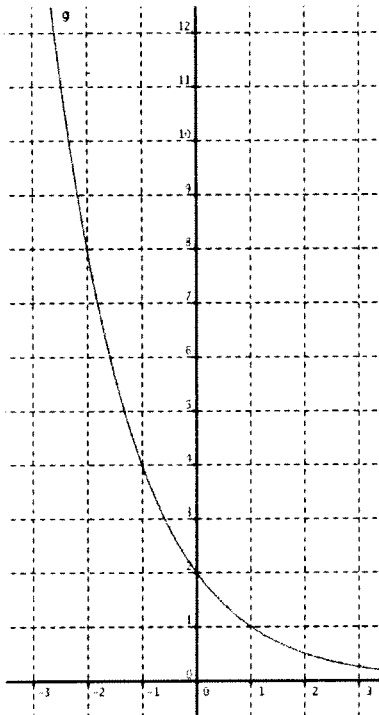
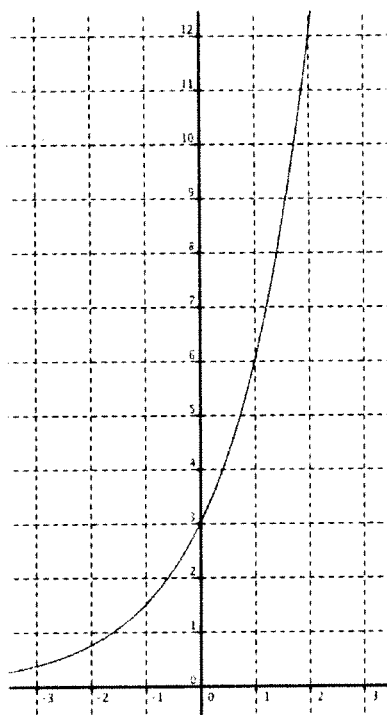
When an exponential function is in the form $f(x) = a(b)^x$

a is the vertical stretch / reflection

b ratio between the y-values

Ex. Write an equation and sketch a graph for the value of an \$80 000 car that depreciates 50% per year.

Ex. Write an exponential equation to match each graph.



Homework: p. 185 # 1, 4, 5, 6.

1. Which of the following functions have the same graph? $f(x) = 9^x$ $g(x) = 3^{2x}$ $h(x) = 3(3^x)$

Explain your answer based on transformations or exponent laws.

2. Explain why the function $y = 4^{-x}$ has the same graph as $y = \left(\frac{1}{4}\right)^x$.

3. Rewrite each function with a positive exponent and graph. Label asymptotes. a) $y = 2x^{-1}$ b) $y = 2^{-x}$